



E. A. Goldman

Pavawa

1912

Arizona

1913-14-15-16-17



1875. Cactus  
 Ht. 3 ft., climbing over old walls; living specimen

1876 Cactus  
 Ht. 6 ft.,  
 77 Ht. 20 ft.

78 Cactus  
 Ht. 15 ft., on old tree trunk

1879 Opuntia  
 Ht. 4 ft., on rocks; living plant collected. The leaves grow much larger than the ones taken.

1880  
 Grows 6 ft. in height in marshy places.  
 81 Vine  
 Ht. 12 ft., climbing over a small tree.

82  
 Abundant on upper slopes near head of Rio Limon  
 Epiphyte

83. Shrub  
 Ht. 10 ft.

84 Cactus  
 Ht. 10-20 ft., growing as a tree sometimes 5 inches in diameter of trunk. Red flowers.

85 Lycopodium

86 Herb  
 Abundant on cool slopes, especially near water

Ruins of Old Panama, Panama Jan. 20, 1912

" " "

" " "

Alhajuela, Panama Feb. 2, 1912

Bay of Panama (San José Rock) Feb. 4, 1912

Empire, Canal Zone Feb. 5, 1912

Lion Hill " Feb. 6, 1912

Mt. Pirri, Panama (5000 ft.) Mar. 6 "

" " " " "

Leona " (1800 ft.) Mar. 10 "

" " 2000 ft. " " "

" " " " "

1887		Shrub
	Ht. 10-20 ft.	
1888		"
	Ht. 10 ft.	
89		Fern
	Grows in masses nearly covering the ground.	
1890		Fern
91		Fern
92		"
	In tops of trees.	
93		Fern
	In a tree top	
94		Fern
	In a tree top	
95		<del>Sh</del>
	Growing along Leana River.	
96		Shrub
	Ht. 6-10 ft.	
97		Tree
	Ht. 75 ft. (acorn-like fruit)	
98		Orchid
	Living plant	
99		Orchid
1900		"
	Living plant	
1		"
	Living plant	
2		"

Leana, Panawa	<sup>3500 ft.</sup>	for May 6 1912		
"	"	"	"	"
Mt. Pirri	"	4500 ft.	"	"
"	"	"	"	"
"	"	"	"	"
Leana	"	1800 ft. May 30	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
"	"	2500 ft. June 2	"	"
"	"	2000 ft.	"	"
"	"	1800 ft.	"	"
"	"	2500 ft.	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"

1903

Living plant

Orchid

Ciana

2500 ft.

Panama, 1912  
June 2

4

Living plant.

"

"

3500 ft.

"

5

Fruit only

Palin

"

2000 ft.

"

6

Ht. 10-15 ft.

Shrub

"

"

"

7

Growing on a stump and overhanging a bank

Fern

"

"

"

8

Overhanging a bank - growing about 6 ft. long. #

Fern

"

"

"

9

In masses over open sunny slopes, partially reclining.

Fern

"

"

"

1910

Hanging suspended from a log on a steep bank

Fern

"

"

"

11

Growing on a stump on a steep bank

Fern

"

"

"

12

Living plant

Orchid

"

"

"

13

From a rotten limb which had fallen from the top of a tall tree.

Fern

"

1800

"

14

From a fallen limb in forest

Fern

"

3500 ft.

June 3

15

From a fallen limb in forest.

Fern

"

"

"

1916

From a fallen limb in forest.

Fern

Cana

3500 ft.

Panama, 1912  
June 3

17

Living specimen, from fallen limb.

Orchid

"

"

"

18

Living specimen, from fallen limb,

"

"

"

"

19

"

"

2000 ft.

June 10

1920

"

"

"

"

21

"

Pirri Range

4500 ft.

June 11

22

"

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"

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23

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24

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25

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29

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1930

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Cana

3000 ft.

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1931

Orchid

Leana

3000 ft.

Panama, 1912  
June 12

32

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33

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34

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1946

Barrigona

47

Mupa

48

49

1950

51

52

53

54

55

56

57

58

59

The common tree fern (photo)

1960

From fallen limb

Palm

"

Leana

"

"

"

"

"

"

"

"

Cactus

Phyllocactus

Cactus

Fern

Fern

Pirri Range (east slope) 5000 ft.

"

"

"

3000 ft.

"

"

"

"

"

"

"

1800 ft.

"

2000 ft.

Pirri Range (east slope) 5000 ft.

"

"

4500 ft.

Panama, 1912

June 12

1961

From fallen limb

62

63

64

65  $\frac{1}{2}$ 

From fallen limb

66

From fallen limb

67

From fallen limb

68

A tree species; ht. 6-10 ft.

69

From fallen limb

1970

Ht. 4-6 ft., very abundant.

71

From fallen limb

72

From fallen limb

73

A common sp. about 30 ft. high.

74

Ht. 30 ft., called "cacao silvestre"

75

From fallen limb

Fern

Shrub

Shrub

Fern

"

"

"

Fern

Fern

Palm

Fern

Fern

Tree

Tree

Fern

Pirri Range (east slope) 4500 ft. Panama,

1912  
June 12

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Cava

3000 ft.

June 13

Aruga

500 ft.

June 16

1976

77

Living plant

Fern

Araya

500 ft.

Panawa, 1912  
June 16

78

Living plant

Orchid

Marraganti

sea level

June 21

79

Living plant

"

"

"

"

80

Living plant

"

"

"

"

81

Cactus

Cana

2000 ft.

Mar. 6

82

Orchid

Marraganti

sea level

May 6  
~~June 21~~

83

Cycad

Palm

"

"

"

~~84~~

"

"

"

"

85

Cactus

Pinogana

"

June 21

86

Fern

Marraganti

"

"

1987. *Ephedra trifurca*

88 *Atriplex* (l. fleshy leaves)

89 (Yucca-like)

90 *Parosela spinosa*

91 *Populus*

92 *Atriplex canescens*

93 *Lechiniscerens*?

94 *Baccharis*

95 *Atriplex* (l. fleshy leaves)

96 *Atriplex* (fleshy leaves)

97 (fleshy leaves)

98 On lower plain

99 *Opuntia*

Ht. 3-4 ft.

Shrub.

Ht. 3-4 ft.

Shrub

Ht. 2 ft.

Cholla cactus

Ht. 2-3 ft.

Mamillaria?

2000

Found in green

1 *Opuntia*

Flat-jointed, almost spineless.

Green plant collected.

Ht. 2-3 ft.

Parker

400 ft.

Arizona, 1913  
Feb. 10

"

"

"

"

"

"

Colorado River, Calif. (opposite Parker, Ariz.) Feb. 11/13

Parker

350 ft.

Feb. 14

"

"

Feb. 20

Colorado River, Calif. (opposite Parker, Ariz.) Feb. 21

Parker

350 ft.

Feb. 22

"

"

"

"

"

Feb. 23

"

"

"

"

"

"

"

400 ft.

Feb. 27

"

"

"

"

"

"

2002

Herb  
Ht. 6-8 ft.

3 Ephedra

Ht. 3 ft.

4 Lycium dried bark, flowers &amp; fruit

Shrub

Ht. 4-6 ft.

5 Opuntia (cholla style) Green herbaceous specimen,

Ht. 3-4 ft.

6 Opuntia (very slender) (Green)

1-2 ft.

7 Echinocereus (4 in)

Ht. 1-2 1/2 ft.

8 Echinocactus (Green)

Ht. 2-3 ft.

9 Mamillaria (Green)

2010

2010 Agave

Ht. 10 ft.

11 Acacia constricta

Shrub

Ht. 10 ft.

12 ~~Holacantha emoryi~~  
~~Holacantha spumosa~~

13 Mesosphaerum emoryi

Ht. 6-10 ft.

14 red fls.

Shrub

Ht. 3-4 ft.

15 Echinocactus (Same sp. as 2008)

Ht. 2-3 ft.

16 (Blue fls.)

Shrub

Ht. 2-3 ft.

Parker

3500 ft.

Arizona, 1913  
Feb. 27

Wicksburg

1400 ft.

Mar. 5

"

"

"

"

"

Mar. 19

"

1200 ft.

"

"

1600 ft.

"

"

1600 ft.

"

"

"

"

Plomosa Mts. (Black Mesa) 2000 ft. Mar. 18

"

"

1400 ft.

"

"

"

"

Wicksburg

"

Mar. 19

"

"

"

"

"

"

Wicksburg

2000 ft.

Mar. 22

2017 *Leaetia holacantha*

18 *Ephedra trifurca*

19 *Amelia farinosa*

20 *Eriogonum*

21 *Mesosphaerum emoryi*

22

Fern

23

Fern

24 *Rhamnus*

25 *Prunus*

26 *Ribes aureum* Pursh

27 *Juniperus pachyphloea* (checkered bark)

28 *Quercus arizonica*

29 *Quercus emoryi*

30 *Arctostaphylos pungens* HBK.

31 *Coccoloba stansburiana* Torr. Shrub

(very distinct leaves)

Wickenburg

"

Phoenix

"

"

"

"

Prescott

"

"

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"

"

Arizona, 1913.  
2000 ft. Mar. 22

"

1100 ft

"

"

"

"

5300 ft.

"

"

"

"

"

"

"

Apr. 11

"

"

"

"

Apr. 20

"

"

"

"

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"

"

2032 *Farsetia arizonica* (Gray) Shrub

33 *Echinocereus*

Grows in bunches among rocks.

34 *Opuntia* (cholla type) (Herbarium & green specimens)

35 *Mamillaria*

36 *Echinocereus*

1 37 *Echinocereus tidestromii* [fide Rose] photo  
Large deep red fls.

2 38 *Echinocereus aggregatus* Engelm.?

3 39 *Echinocereus aggregatus* Engelm.?

420 40 *Echinocereus engelmannii*  
(long spines)

5 41 *Opuntia* (Herbarium and green specimens)  
(small sp., yel. fls.) photo

6 42 *Opuntia basilaris*

7 43 " (Herbarium & green specimens)  
(Large sp. with yel. fls.) photo

8 44 *Opuntia nyctricia* photo  
Long spines - on plateau

9 45 *Echinocactus* photo

46 *Opuntia franciscana*? photo  
Isolated clumps in parks.

Prescott

Arizona, 1913.  
5300 ft. Apr. 20

Mormon Lake (25 mi. S. of Flagstaff) alt. about 6900 ft. May 2

Grand Canyon (Bright Angel Trail) 6000 ft. May 31

" " 5000 ft. "

" " 3800 ft. "

" " " "

" " 4500 ft. "

" " 2500 ft. "

" " 3800 ft. "

" " Plateau at 3800 ft. "

" " " "

Flagstaff (Black Bill Park, 12 mi. N.E.) 6800 ft. June 4

*whipplei* Engelm.

2047 *Opuntia* (cholla style) (Huberian & green specimens) photo

48 *Ranunculus alsinacifolius* Gay photo

49 *Juniperus* (stripy bark) *utahensis* (Engelm.) Lemmon

2050 *Pinus edulis*

51 ~~Grossularia~~ *Ribes insubricum* Lindl.

52 *Psoralea micrantha* Gray Shrub  
Eaten by prairie dogs

53 *Lycium pallidum* Murr. *guttatum*-like Shrub

54 *Astragalus* locs? Shrub

55 *Yucca angustissima* Trelease

56 *Yucca angustissima* photo

57 *Yucca glauca* Nutt.?

58 ~~Amelanchier~~ *marmorica* Schneid. Shrub or tree  
Ht. 15 ft.

59 *Salix*

Ht. 15 ft.

2060 *Echinocereus*

61 *Leucocarpus parvifolius* *flabellifolius* Rydb.

Arizona, 1913

Flagstaff (Black Bill Park, 12 mi. N.E.) 6800 ft. June 4.

Mormon Lake (25 mi. S. of Flagstaff) 7200 ft. May 3

" " " "

" " " "

Flagstaff (9 mi N.E.) 6800 ft. May 9

" " " June 4

" " " "

" " " "

" (9 mi. E. at edge of cedar belt) 6700 ft. "

" " " "

" " " "

Mt. Elden (Near Flagstaff) 7500 ft. "

" " " "

Grand Canyon (Bright Angel Trail) 6000 ft. May 31

" " " "



- Cercaria stansburiana* Torr.  
 2062 ~~Cercaria~~  
 Finely divided leaves - associated with  
 2061.
- 63 *Calceogone ramosissima* Torr. Shrub  
 The dominant species on plateau bordering  
 inner gorge at 3800 ft. - Ht. about 2 1/2 ft.
- 64 *Agave*  
 Ht. 10 ft. - Rather common between 3800 & 4500 ft  
 on upper Sonoran slopes. - photo
- 65 ~~Berberis~~ *Odestrum fremontii* (Torr.) Rydb.  
 Ht. 10 ft.
- 66 *Schmaltzia circodes* Greene  
 Ht. 6 ft.
- 67 *Fraxinus cuspidata* Torr.  
 A common and handsome flowering species. -  
 photo.
- 68 *Fraxinus anomala* Torr.  
 Rounded leaf - Ht. 10 ft. - less common than  
 2067
- 69 *Ostrya knowltoni* Tree  
 Sharp hornbeam - Ht. 15-25 ft. - Common  
 along gullies between 4000-5000 ft.
- 2070 *Salix matthewii* Gray Shrub  
 Ht. 1 ft.
- 71 *Fendlerella cynosa* Greene Shrub  
 Ht. 1 - 1 1/2 ft.
- 72 *Forsellia spinescens* (Gray) Greene Shrub  
 Ht. 3 ft
- 73 *Ephedra nevadensis* S. Wats.  
 Short bracts - Same as 2074?

Arizona, 1913.  
 Grand Canyon (Bright Angel Trail) 6000 ft. May 31

"	"	3800 ft.	"
"	"	4000 ft.	"
"	"	4500 ft.	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	5000 ft.	"
"	"	6000 ft.	"
"	"	5000 ft.	"
"	"	"	"
"	"	4000	"

- 2 2074 *Ephedra nevadensis* S. Wats.  
Short bracts - associated with 2075,  
75 *Ephedra viridis* Coville  
Long bracts - associated with 2074.  
76 - ~~Philadelphus~~ *Fendlera tamentella* Thunberg  
77 ~~Grossularia~~ *Ribes cereum* Lindl.  
78 *Amelanchier utahensis* Kochne Shrub  
Ht. 6 ft. - service-berry  
79 *Symphoricarpos vaccinioides* Rydb. Shrub  
Ht. 3 ft.  
2080 - *Ptelea angustifolia* Benth. Shrub  
Ht. 6-10 ft.  
2081 - *Ptelea angustifolia* Benth. Shrub  
Ht. 6-10 ft - Same as 2080?  
6 2082 - *Razoumofskyia cryptopoda* (Engelm.) Coville -  
Parasite on *Pinus ponderosa*  
2083 - *Opuntia*  
Yellowish spines, sent in green  
2084 - *Sambucus neomexicana* Weston  
20 2085 - ~~Barbieria~~ *Odoestemon fremontii* (Torr.) Rydb. -  
Ht. 10 ft.  
2086 - *Populus trichocarpa*  
Ht. 20-30 ft.  
2087 - *Vitis arizonica* Engelm.  
2088 - *Juniperus scopulorum* Sarg.  
~~uliginosa?~~

Grand Canyon (Bright Angel Trail) 4000 ft. May 31. Arizona, 1913.

• " " " " "

" " 6000 ft. "

“ “ “ “

“ “ “ “

6.                      6.                      6.                      6.

ii)  $\mathcal{H}_1$   $\mathcal{H}_2$   $\mathcal{H}_3$   $\mathcal{H}_4$

1. 1. 1. 1.

-Flagstaff 7000 ft. June 15

- Walnut Canyon (10 mi. S.E. of Flagstaff) (about 6500 ft.) "

11. 12. 13. 14. 15.

" " " " "

11

" " " "

" " " " "

2089 - *Cornus instolonae* A. Nels.

2090 - *Symphoricarpos rotundifolius* Gray <sup>Ht. 6 ft.</sup>

91 - *Juglans major* (Torr.) Heller

92 - *Robinia neomexicana* Gray shrub or tree. <sup>Ht. 10 - 25 ft.</sup>

93 - *Yucca baccata*

94 - *Ptelea mollis* Curt.

95 - ~~*Sporaea*~~ *Chamaebatiaria millefolium* (Torr.) Maxim. <sup>Ht. 6 - 8 ft.</sup>  
*S. millefolium?* <sup>Ht. 4 - 8 ft.</sup>

96 - *Salix*

97 - *Saxiphraga fruticosa* (L.) Rydb. shrub <sup>Ht. 10 - 20 ft.</sup>  
<sup>yel. fl.</sup> <sup>Ht. 3 ft.</sup>

98 - *Amelanchier marmorata* Schneid. shrub <sup>Ht. 6 ft.</sup>  
<sup>semin. - berry</sup>

99 - *Distegia involucreata* (Richards.) Rydb. shrub <sup>Ht. 3 ft.</sup>  
<sup>along water, among quaking aspens</sup>

2100 - ~~*Picea*~~ *Gracilaria pinetorum* (Greene) Cov. & Britt <sup>Ht. 3 - 6 ft.</sup>

1 - *Abies concolor*

2 - *Prunus emarginata* (Dougl.) Wats. shrub <sup>Ht. 6 - 8 ft.</sup>  
<sup>sem. wh. fls.</sup>

3 - *Pachystima myrsinites* Raf. shrub <sup>Ht. 2 ft.</sup>

Arizona, 1913.

Walnut Canyon (10 mi. S.E. of Flagstaff) about 6500 ft. June 15.

" " " "

" " " "

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~~Abert Spring (15 mi. N.W. of Flagstaff) 8700 ft. June 27~~

Abert Spring (15 mi. N.W. of Flagstaff) 8700 ft. "

" " " "

" " " "

" " " "

" " " "

Hendrick Peak

About 8500 ft. - June 27

" 8500 ft. "

" 9000 ft. "

" 9000 ft. "

2104 - *Amelanchier narmatica* Schneid.

Service berry

5 - *Acer glabrum* Torr.

6 - *Cythera bulbosa* (L.) Hauss. Orchid

7 - *Symphoricarpos rotundifolius* Gray

8 - *Sorbus scopulina* Greene Shrub

Ht. 6 - 10 ft.

9 - *Cornus instans* A. Nels. Shrub

Ht. 6 - 8 ft.

2110

2110 - *Picea engelmanni* (Parry) Engelm.

11 - *Sambucus microbotrys* Rydb. ?

12 - *Viola canadensis* L.

13 - ~~Chamaecrista~~ *Aquilegia chrysantha* Gray

14 - *Odartemon repens* (Lindl.) Ckell. Shrub

Ht. 6 - 10 in.

15 - *Salix*

16 - *Rubus arizonicus* (Greene) Rydb. Shrub

Ht. 1 - 2 ft.

18 - *Lonicera ciliosa* Pursh.

19 ~~Holodiscus~~ *Sericotheca dumosa* Rydb. Shrub

Ht. 6 - 10 ft.

Skendrick Peak -

Arizona, 1913.  
8500 ft. - June 27

"

9000 ft.

"

"

"

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"

8500 ft.

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9500 ft.

"

Little Spring

8500 ft.

June 28

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2120 - *Thalictrum fendleri* Engelm.

21 - ~~*Grossularia*~~ *Ribes micrianum* Lindl.

22 - *Dugaldia Looperii* (Gray) Rydb. Herb  
Yellow composite eaten by *Callospermoph.*

23 - *Calochortus nuttallii* T. & G. Herb

24 - *Rosa*

25 - *Leeanosthus*

26 - *Frasera venosa* Greene Herb  
*Frasera speciosa?*

27 - *Iris missouriensis* Nutt.

28 - *Juniperus sibirica* Burge.  
Dwarf species

29 - *Anticlea elegans* (Pursh) Rydb. Herb

30 - ~~*Chlor.*~~ *Primula parryi* Gray Herb

31 - *Agaricus purpurea?* Herb

32 - *Madronella* Herb

33 - *Histegia involucreata* (Richards.) Shred  
Black very in reddish bracts

34 - *Aconitum columbianum* Nutt. Herb  
Monkshead

Arizona, 1913,  
June 28

Little Spring -

8500 ft.

Hendrick Park

8200 ft.

Little Spring

8500 ft.

July 7

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San Francisco Mts. - Crater, at 9000 ft. July 16

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" 9500 ft.

"

Trail

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" "

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2135- *Ribes montigenum* McCl.

36- *Salix*

37- *Quercus arizonica*

38- *Vitis arizonica* Engelm.

39- *Juniperus scopulorum* Larg.  
Straggly bark - lax foliage.

40- *Coccoloba stansburiana* Torr.

41- *Garrya wrightii* Gray

42- *Tetradymia inermis* Nutt. Shrub  
Probably upper Sonoran Mt. 2 1/2 ft.

43- ~~Grossularia~~ *Ribes cereum* Lindl.

44- *Cheilanthes eatoni* Sargent. Fern  
alt. 3-5 ft.

45- ~~Podium~~ *Orostachys fremontii* (Torr.) Rydb.

46- *Opuntia procumbens*  
Succulent green

47- "

Succulent green

48- *Opuntia procumbens*

Herbarium specimen (fl. only) same as 2146

49- *Cylindropuntia*

Herbarium specimen

Arizona, 1913  
San Francisco Mts - crater, at 10000 ft. - July 16

Mt. Elden - 7000 ft. - July 17

" " "

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" " "

2150 - *Opuntia*

yellow fls. - *herbarium specimen*

51 - *Opuntia*

sent in green - same as 2150.

52 - *Opuntia*

53 - *Juniperus monosperma* (Engelm.) Sarg.  
stiff foliage - ~~straggly bark~~

54 - *Juniperus scopularum* Sarg.

55 - ~~Rhus~~ *Schmaltzia trilobata* (Nutt.) Greene

56 - *Artemisia frigida* Willd.

Sm. sp. with five leaves

57 - *Atriplex canescens*!

58 - *Chamaebatiaria millefolium* (Torr.) Maxim.  
*millefolium*

59 - *Rosa*

60 - *Rubus parvifolium* (Nutt.) Rydb.  
*Thimble-berry*

61 - ~~Acer~~ *Negundo interior* Britton  
*maple*

62 - ~~Acer~~ *Negundo interior* Britton  
~~box-elder~~ box elder

63 - *Ceanothus fendleri* Gray

64 - *Garrya mollis* Greene

Arizona, 1913.

Flagstaff (Black Bill Park, 12 mi. N.W.) 6900 ft. July 17

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"

Walumb Canyon (5 mi. S. of Mt. Elden) 6500 ft. July 19

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Oak Creek (18 mi. S.E. of Flagstaff) 5400 ft. - July 24

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2165 - *Populus angustifolia* James.

66 - *Agave*

67 - *Alnus tenuifolia* Nutt.

68 - *Cornus mistolonea* A. Nels.

69 - ~~*Prunus*~~ *Padus melanocarpa* (A. Nels.) Shafer

2170 - *Platanus wrightii* S. Wats.

71 - *Rubus arizonicus* (Griseb.) Rydb.

72 - *Nolina*

73 - *Abies concolor*

74 - *Philadelphus argenteus* Rydb.

75 - ~~*Holodiscus*~~ <sup>*Philadelphus*??</sup> *Sericotheca dumosa* Rydb.

76 - *Symphoricarpos rotundifolius* Gray

77 - *Ptelea mollis* Curt.

78 - *Arctostaphylos tomentosa* Dangle.

79 - *Arctostaphylos pungens* HBK.  
pubescent form  
glabrous form

Arizona, 1913.

Oak Creek (18 mi. S.E. of Flagstaff, 5400 ft., July 24 -

" (13 mi. S.E. of Flagstaff) 6400 ft. "

" (18 mi. S.E. of Flagstaff), 5400 ft. "

" " " "

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" " " "

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" " " "



2180 - *Quercus emoryi*

81 - *Quercus arizonica*

82 - *Rhamnus crocea* pilosa Trelease

83 - *Rhamnus urtica* Greene

84 - *Crataegus*

85 - *Sambucus mexicana* Wootton

86 - *Juglans major* (Torr.) Heller

87 - *Rhus cismontana* Greene

88 - <sup>Sumach</sup> Fern

89 - *Pellaea atropurpurea* (L.) Link Fern

2190 - *Opuntia*

<sup>sm. sp. sent in green</sup>  
91 - *Cleome serrulata* Pursh Herb

92 - *Symphoricarpos vaccinioides* Rydb.

93 - *Mamillaria*  
*Herbarium specimen*

94 - *Mamillaria*  
Sent in green - same as 2193

Arizona, 1913

Oak Creek (18 mi. S.E. of Flagstaff) 5400 ft. July 24 -

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

Flagstaff 6900 ft. July 28

Anderson Canyon (20 mi. S.E. of Flagstaff) 7000 ft. July 31

Anderson Mesa " " "

" " " " "

2195-*Opuntia*

96-~~*Basilia*~~ *Forestiera neanuphiana* Gray

97-*Amelanchier narmonica* Schneit.  
Service-berry

98-*Quercus*

99-*Opuntia*

2200-*Opuntia basilaris*

1-*Opuntia*

2-*Opuntia*

3-*Opuntia*

Deep red fruit - said to have deep red fls.

4-*Opuntia*

Pink fruit - said to have yellow fls.

5 *Palmetto* *plattensis* Nutt. Woody herb

6 *Fendlera tamentella* Tharber

7 *Symphoricarpos rotundifolius* Gray

8 *Pentstemon*

herb

Hummers working on fls.

9 *Cercocarpus pauciflorus* *flabellifolius* Ryth.

Arizona, 1913.

Anderson Canyon (30 mi. S.E. of Flagstaff) 6500 ft. July 31

" " 6800 ft. " 6

Anderson Mesa " 7000 ft. "

Anderson Canyon " " 7

Grand Canyon (Bright Angel Trail) 6500 ft. Aug. 18

" " 4000 ft. Aug. 19

" (Indian Gardens) 3800 ft. Aug. 25

" " " "

" " " "

" (Bright Angel Trail) 6500 ft. Aug. 19

" " " "

" " " "

" " 6800 ft. "

" " " "

2210 *Ephedra viridis* Conell

*Chamaebatiaria*  
11 ~~*Spiraea*~~ *millefolium* (Torr.) Maxim.

12 ~~*Cercocarpus*~~ *Cowania stansburiana* Torr.  
*divida*

13 *Sambucus neomexicana* Watson

14 *Eriogonum* Shrub  
*Common along river*

15 *Amelanchier utahensis* Koehne Shrub  
*Along river & down to 5500 ft. Alt. 4-6 ft.*

16 *Quercus undulata*

17 ~~*Gracilaria*~~ *Ribes nubicaria* Lindl.

18 *Cercocarpus arizonensis* Jones Shrub

19 ~~*Ribes*~~ *Gracilaria velutina* (Greene) C. N. B.

22

2220 *Astragalus knowltonii*

21 *Argemone*

22 *Ptelea angustifolia* Benth.  
*Small leaves*

23 *Fraxinus cuspidata* Torr.

24 ~~*Phacelia*~~ *Schmaltzia cissoides* Greene

Arizona, 1913.

Grand Canyon (Bright Angel Trail) 6800 ft. Aug 19 5

" " " " 6

" " " " "

" " " " 7

" " " " "

" *some distinct* " " "

" (El Tovar) 6866 "

" " " " "

" (Near El Tovar) 7000 ft. "

" (Bright Angel Trail) 6800 ft. "

" " " " "

" " 4800 ft. "

" " " " "

" " 5500 ft. "

" " 4800 ft. "

2225 *Bernardia myricaeifolia*  
Euphorbiaceae sp.

26- *Atriplex canescens*

27 *Coleosanthus reniformis* (Gray) Shrub

28 *Ptelea angustifolia* Benth.  
"Upper S.  
Narrow leaf

29 *Celtis reticulata* Torr.

2230 *Amelia frutescens* Gray  
Green leaves

31 *Cercis occidentalis* Torr.

32- *Atriplex canescens* (Pursh) Nutt.

33 *Stanleya arcuata* Rydb. Shrub

34 *Parthenium incanum* H.B.K. Shrub

35 *Isocoma* Shrub

36 *Gutierrezia* Shrub

37 *Salix*

Broad leaf

38 *Salix*

Narrow leaf

39 *Baccharis emeryi* Gray

Arizona, 1913

Grand Canyon (Bright Angel Trail) 4800 ft. Aug. 19 5

" " " " 6

" " " " "

" (Indian Gardens) 3800 ft. Aug. 20 7

" " " " "

" " " " "

" " " " "

" " " " "

" " " " Aug. 21

" " " " "

" " " " "

" " " " Aug. 25

" " " " "

" " " " "

" " " " "

2240 *Vitis arizonica* Engelm.

41 *Adiantum capillus-veneris* L. Fern

42- *Echinocereus*

43 <sup>Long spines</sup>  
*Lippia wrightii* Gray Shrub  
P.S.

44

<sup>P.S.</sup>  
45 *Pluchea sericea* (Nutt.) Conule

46 *Bernardia myricaefolia* Shrub  
*Euphorbiaceae* species

47 Shrub

<sup>P.S.</sup>  
48 *Ephedra nevadensis* S. Wats.

49 *Baccharis glutinosa* Pers.  
Narrow top

2250 *Encelia farinosa*

51- *Salix bebbiana* Sarg.

52- *Rosa*

53- *Prunus emarginata* (Dangle.) Walp.

54- *Lonicera ciliosa* Poir.

Arizona, 1913.  
Grand Canyon (Indian Gardens) 3800 ft. Aug. 25

" (Indian Garden Creek) 3500 ft. Aug. 26

" " " "

" (Pipe Creek) 2700 ft. Aug. 27

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

Bill Williams Mt. 9000 ft. Sept. 6

" " " "

" " " "

" " " "

- 2 2255 - *Ceanothus fendleri* Gray
- 56 *Oreobatus nemexicanus* (Gray) Rydb.  
*Thimbleberry*
- 57 - *Sambucus nemexicana* ?
- 58 *Sambucus nemexicana* Wooten
- 59 - ~~Ribes~~ *Grossularia pinnatarum* (Greene) C. T. B.  
*String fruit*
- 2260 *Sorbus scopulina* Greene Shrub  
*Small leaves - barbed*
- 61 *Amelanchier marmorata* Schneid.
- 62 *Symphoricarpos vacinioides* Rydb. ?  
*Small leaves*
- 63 *Symphoricarpos rotundifolius* Gray  
S 2262?
- 64 - *Acer glabrum* Torr.
- 2 65 *Chrysothamnus* Shrub
- 66 - *Echinocereus*
- 67 - *Pinus ponderosa*
- 68 *Opuntia*  
*Long-jointed cholla*
- 69 *Opuntia*  
*Flat-jointed*

Bill Williams Mountain	Arizona, 1913	7000 ft. Sept. 7
"	"	"
"	"	8000 ft. "
"	"	7300 ft. "
"	"	8500 ft. "
"	"	"
"	"	"
"	"	"
"	"	7300 ft. "
"	"	8500 ft. "
Williams	"	6750 ft. Sept. 9
Aubrey Valley, 10 mi. N. of Pica	"	5600 ft. Sept. 18
Pine Springs, Hualapai Ind. Res.	"	7000 ft. Sept. 19
Prospect Valley	"	4500 ft. Sept. 30
"	"	5500 ft. Oct. 1

2270 - *Mamillaria*

71 - *Nolina*

72 - *Opuntia whipplei*

73 - *Atriplex canescens*

74 - *Cercocarpus ~~parvifolius~~ montanus* Raf.

75 - *Nolina*

76 - *Quercus arizonica*

77 - *Eriogonum* Shrub

78 - ~~*Berberis*~~ *Odontemon haematocarpa* (Wootton) Heller

79 - *Quercus*

Low-growing with small, spiny leaves.

2280 - *Cleome serrulata* Pursh  
white fls.

81 *Amelanchier utahensis* Koehne Shrub  
Growing along river at El Dorado

82 ~~*Ptero*~~ *Gracilaria leptantha* (Gray) C. V. B.

83 *Juniperus monosperma* (Engelm.) Sarg.

84 *Juniperus utahensis scopulorum* Sarg.

Arizona, 1913

Prospect Valley, Hualpai Ind. Res. Sept. 30. 4500 ft.

Grand Canyon, <sup>Lower end of Prospect Valley</sup> " " " "

" " " " 6800 ft.

Aubrey Valley, 10 mi. N. of Pica, Hualpai Ind. Res. Sept. 18-5600 ft.

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" 10 mi. S. of Pine Spr. " Sept. 19 6000 ft.

Pine Springs, (8 mi N.) " Sept. 20 7000 ft.

" " " " "

" " " " "

" " " " "

2285- *Ceanothus*

86- *Lepargyrea rotundifolia* (Pursh) Engelm.  
Light-colored leaves

87- *Schmaltzia trilobata* (Nutt.) Greene

88- *Nathalaena sinuata* (Sw.) Kunt. Fern

89- *Ephedra nevadensis* S. Wats.

2290- *Chrysanthamnus* Shrub  
Common composite

91 *Eriogonum* Shrub

92- *Echinocactus*  
Small-bunched species

93- *Echinocactus*  
Large species

94 *Astragalus* Herb  
Eaten by mountain sheep

95- ~~*Microphorum*~~ *Lippia wrightii* Eng.

96 *Opuntia basilaris*

97 *Cotyledon*

98 *Echinocactus* (bunched species)

99 *Echinocereus* (clumps)

Arizona, 1913

Prospect Valley (lower end) Huachuca Ind. Res. Sept. 25, 5000 ft.

" " " " "

" " " " "

Grand Canyon (lower end of Prospect Valley) Sept. 26 4500 ft.

" " " "

" " " "

" " " "

" " " "

" " " "

" Near lower end of Prospect Valley " 6500 ft.

" Lower end of Prospect Valley " 4500 ft.

Pinajas Altas

Nov. 20

"

"

Pule Tanks

Dec. 4

"

"



2300

Slender 5-ridged cactus

1-Cylindropuntia (Very common sp.)

2 " (Very slender sp.)

3-Mammillaria

4-Cylindropuntia Bigelovii

5-Yucca-like plant

6-Mesophaerum emeryi (Torr.)

7-Ericameria

erect, common on lower slopes of mts.

8-Jatropha spathulata

9-Elaeagnus microphyllum

2310 - Agave

common on upper slopes of Gila mts.

11-Plum ovata S. Wats.

12-Atriplex

13-Zizyphus

acacia-like shrub

14-Galearia ambrosioides (Cov.)

rep. bearing burrs

Tule Tanks, Arizona

Arizona, 1913

Dec. 4

" " "

" " "

" " "

" " "

Pinasas Altas "

Nov. 20

" " "

" " "

" " "

" " "

" " "

" " "

" " "

" " "

" " "

2315- *Lycium*

*Lycium* like a shrub

16- *Asclepias subulata* DC.

*Asclepias* like a shrub

2317- *Gartneria dumosa* (Gray) Kuntze

Very abundant desert shrub

18 *Gymnosperma caryocarpum* DC.

Common on lower slopes of mts.

19 *Salizaria mexicana* Gray

Common on lower slopes of mts.

23 20- *Ephedra nevadensis* S. Wats.

*Boloperone californica* Benth.

21- ~~*Oniscanthus thurberi* Gray~~

Shrub with horseradish

22- *Cuculia farinosa*

23- ~~*Halimolobos spinosa*~~ *Halacantha emeryi* Gray

24- *Harsfordia emeryi* Gray

Mexican species

25 *Ditaxis*

Euphorbiaceous shrub

26 *Acer glabrum*

27 ~~*Ribes*~~ *Grossularia leptantha*

28 *Ptelea tomentosa* Raf.

29 *Edwinia americana*

Shrub

1913-14

Pinajas Altas, Arizona

Nov. 20

" "

"

" "

"

Gila Mts.

.. (8 mi. N. of Pinajas Altas, Nov. 25

" "

"

"

" "

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" "

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" "

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"

Pule Pikes

" (2 mi. south)

Dec. 11

Pule Mts. Sonora

"

" "

"

Graham Mts, Arizona (9000 ft.) July 24, 1914

" "

"

" "

5000 ft. N. slope

"

" "

7000 ft.

"

2330 - ~~Rhamnus~~ Rhamnus betulifolia

31 - ~~Arbutus~~ Oreobatus neomexicanus  
Thimbleberry

32 - Noliva microcarpa S. Wats.

33 - Ceanothus fendleri Gray

34 - Ceanothus mogollonicus

35 - Arbutus arizonica

36 - Populus wislizeni  
d. Wood-bound

37 - Fraxinus attenuata Jones

38 - Ephedra trifurca

39 - Ceanothus fendleri  
among yellow pines

2340 - Arctostaphylos pungens A. S. K.

41 - Agave ~~foliosa~~ parryi Engelm.

42 - Lemniscus arizonica

43 - Populus wislizeni  
small leaved sp.

44 - Peniocereus greggii Cactus  
Long, slender stemmed,

Arizona - 1914.  
Graham Mts, N. slope, July 24 - 9000 ft.

" " " "

" " " 5000 ft.

" " " 8000 ft.

" " " 9000 ft.

" " " 8000 ft.

" S.W. base July 26 4600 ft.

" " " "

" " " 6000 ft.

" W. slope " 8500 ft.

" " " 6000 ft.

" " " "

Santa Teresa Mts. July 29 "

" Black Rock Wash " 4500 ft.

Gila Mts, W. base Aug. 1 (Graham Co.) 4000 ft.

- 2345- ~~Parkinsonia~~ *Cercidium torreyanum*  
 46- ~~Micospheerum anagy~~ *Lippia wrightii* Gray  
 47- *Hymenoclea monogyra*  
 48- *Sapindus drummondii* H.A.  
 49- *Simmondsia californica*  
 50- *Pinus monophylla*  
     ~~monophylla?~~ Associated with 2351  
 51- *Pinus edulis*  
     Associated with 2350  
 52- *Pinus chilhuahuana*  
 53- *Leucoscarpus montanus* Raf.  
 54- *Juniperus monosperma*  
 55- *Garrya wrightii*  
 56- *Rhamnus crocea pilosa* Treb.  
 57- *Quercus arizonica*  
 58- *Cheilanthes fendleri* Fern  
 59- *Ribes inclerianum*  
     Smooth with gray foliage

- Arizona, 1914.  
 Gila Mts., W. base (Graham's) Aug. 1. 3500 ft.  
 " " " " 4300 ft.  
 " " " " "  
 " " " Aug. 2 4500 ft.  
 " " " " 4300 ft.  
 Graham Mts., W. slope July 26 6500 ft.  
 " " " " "  
 " " " " 7000 ft.  
 Gila Mts. " (Graham's) Aug. 2 5000 ft.  
 " " " " "  
 " " " " 6000 ft.  
 " Summit " Aug. 3 6800 ft.  
 " W. slope " " 5000 ft.  
 " Summit " " 6800 ft.  
 " " " " "

2360 - *Salvia pinguifolia* (Fernald)

61 - *Duroia villosa* Rydb.

62 - *Scrophularia parviflora* Herb

63 - *Sericotheca dumosa* (Nutt.) Shreve  
Rydb.

64 - *Fendlera ~~spicata~~ tomentella* Thurnber

65 - *Notholaena sinuata* Fern

66 - *Echinocactus wislizeni*

67 - *Pellaea mucronata* D.C. Eaton Fern

68 - *Cheilanthes eatoni* Davenport Fern

69 - *Notholaena standleyi* Maxon Fern

2370 - *Cheilanthes fendleri* Fern

71 - *Nolina microcarpa* S. Wats.

72 - *Leurocarpus eximius* Rydb.

73 - *Duroia pumila* ?

73<sup>a</sup> - *Arctostaphylos pringlei* Parry

Gila Mts.,

Summit

"

"

"

"

"

"

"

"

"

6500 ft.

"

"

"

"

6800 ft.

"

"

"

"

6500 ft.

"

"

"

"

6800 ft.

Solomonville, 5 mi west

Aug. 11

"

3200 ft.

Leonardo Mts.

Aug. 17 - Greenlee Co., - 6500 ft.

"

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"

"

5000 ft.

"

"

"

6500 ft.

2374 - *Quercus hypoleuca*

75 - *Garrya currightii*

76 - *Pinus monophylla*

77 - *Quercus ~~hypoleuca~~ reticulata*

78 - *Quercus emoryi*

79 - *Philadelphus microphyllus* Gray

2380 - *Eriodactylon angustifolium*

81 - *Quercus arizonica* reticulata

82 - *Aceratis rusbyi* Vail Herb

83 - *Salvia pinguifolia* (Fernald)

84 - *Fendlerella cymosa* Greene Shrub

85 - *Leupressus arizonica*

86 - *Plum cismontana*  
Sumach

87 - *Simmondsia californica* Shrub

88 - *Populus wislizeni*  
Common along San Francisco River

Coronado mts. Graham Co.

"

"

"

"

"

"

"

6500 ft.

"

"

"

"

"

"

"

5000 ft.

"

"

"

6500 ft.

"

"

"

5000 ft.

"

"

"

"

"

"

"

6000 ft.

"

"

"

6800 ft.

"

"

"

6500 ft.

"

"

"

"

"

"

"

"

Aug. 18 3500 ft.

"

"

"

"

2389 - *Nomisia pallida* (Tor.) Shrub

90 - ~~*Misophaenum*~~ *Lippia wrightii*

91 - *Salvia pinguifolia* (Fernald)

92 - *Rhus microphylla*

93 - *Juniperus scopularum* Sarg.  
Fox foliage

94 - *Platanus wrightii* S. Wats.

95 - *Rhus cismontana*

96 - *Alnus oblongifolia* Torr

97 - *Parthenocissus vitacea*  
Woodbine - common climber

98 - *Ptelea tomentosa* Raf.

99 - *Robinia neomexicana* Gray

2400 - *Schmaltzia leiocarpa* Greene

1 - *Ceanothus fendleri* Gray  
common along R.P. Canyon bottom

2 - *Salvia pinguifolia* (Fernald)

3 - ~~*Acacia*~~ *Mimosa biuncifera*

Helixton, Greenlee Co., Arizona, 1914  
Aug. 18 3500 ft.

" " Aug. 19 "

" " " "

San Francisco River, 7 mi. above Helixton, Aug. 22 3600 ft.

Blue River (Gosper Rch.) Greenlee Co. Aug. 28 5000 ft.

" " " "

" " Aug. 30 "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " Sept. 4 "

" " " "

- 2404 - *Juniperus sibirica* Burqd.  
Dwarf species
- 5 - *Juniperus scopulorum* Sarg.  
Lax foliage - stringy bark
- 6 *Dugaldia haspeckii* (Gray) <sup>1 herb.</sup>  
<sup>Noted & coll. on San Francisco Mt. last year.</sup>  
Abundant in Canadian zone crevices - a composite.
- 7 - *Acer glabrum*
- 8 - *Acer grandidentatum*
- 9 - *Ceanothus fendleri*
- 2410 - *Garrya wrightii*
- 11 - ~~Mesophyllum~~ *Lippia wrightii*
- 12 - ~~Bumelia~~ *Forestiera neomexicana*
- 13 - *Berberis fremontii*
- 14 - ~~Grossularia~~ *Ribes muscalerium*?
- 15 - *Woodsia* Fern
- 16 - *Sericotheca dumosa* (Nutt.) Rydb. Shrub
- 17 - *Agastache micrantha* Herb
- 18 *Pericoma caudata* Gray Herb

Alpine	Arizona, 1914.	
	Sept. 20 - 8500 ft.	
Springerville (5 miles south)	"	7500 ft.
Prieto Plateau (Blue Range)	Sept. 11	9000 ft.
"	"	"
"	"	7000 ft.
"	"	7500 ft.
"	"	7000 ft.
Blue River (Casper Ranch) Graham Co.	Sept. 11	5000 ft.
"	"	"
Springerville	Sept. 22	7000 ft.
"	Oct. 2	5800 ft.
"	"	"
"	"	"
"	"	"
"	"	"



- 2419 - *Juniperus mono.*  
 20 - *Yucca glauca* Nutt.  
 21 - *Nolina microcarpa* S. Wats.  
 22 - *Atriplex confertifolia*  
 23 -  
     Ht. 2 1/2 ft.  
 24  
     Ht. 2 ft.  
 25  
     Ht. 6 ft.  
 26 - *Agave*  
 27 - *Pinus monophylla*  
 28 - *Mamillaria*  
 29 - *Vitis arizonica* Engelm.  
 2430 - *Opuntia hypoleuca*?  
 31 - *Pinus chihuahuana*  
 32 - *Garrya*  
 33 - *Rhamnus tomentella*

in

Shrub

Shrub

Shrub

Springerville

"

"

Las Vegas, Nevada,

"

"

"

Sheep Mts.

"

"

Las Vegas

Charleston Mts.

"

"

"

Arizona, 1914  
 Oct. 3 5800 ft.

"

"

Oct. 16

"

"

"

Oct. 26

"

"

Oct. 29

Nov. 18

"

"

"

2000 ft.

"

"

"

3000 ft.

4000 ft.

3000 ft.

2000 ft.

4000 ft.

6000 ft.

4500 ft.

"

2434 - *Arctostaphylos pungens*

35 - *Populus fremontii*

Large broad-leaved sp.

36 - *Cercodictyon angustifolium*

37 - *Quercus*

38 - *Echinocactus cylindraceus*

39 - *Abies concolor*

40 - *Cercocarpus arizonicus* Rydb.  
Shrub leaves

41 - *Woodwardia spinulosa* Fern  
Large species growing near stream. ♀

42 - *Cercocarpus ledifolius* Nutt.  
Broad leaves.

43

Charleston Mts., Nevada

Nov. 18

4500 ft.

"

"

"

4000 ft.

"

"

"

"

"

"

"

"

"

"

"

"

"

"

"

6000 ft.

"

"

"

"

"

"

"

4000 ft.

"

"

"

6000 ft.

44

2443 - *Opuntia*

44 - *Yucca angustifolia*

45 - *Salix*

46 "

47

Sedge

48

Sedge

49

Sedge

2450

Herb

Growing on bottom of lake abundantly.

51

Herb

52

Sedge

53 - *Peltanogiton*

54

Sedge

55 *Juncus*

56

Sedge

57 - *Ribes*

Holbrook

Arizona, 1915.  
June 4

"

Springerville

June 8

7000 ft.

"

"

"

Marsh Lake, White Mts. June 25

9000 ft.

"

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Mt. Ord

July 14

10800 ft.

2458

59

2460

61

62

63

64

65-Ribes

Thorny fruit.

66 - Cornus?

67 - Symphoricarpos

68 - Symphoricarpos

69 - Primula parryi

2470 - Vaccinium

71 - Ribes montigenum

72 - ~~Sorbus scopulina~~

Sedge

Sedge

Sedge

Sedge

Grass

Grass

Shrub

Mt. Ord, White Mts.

July 14

Arizona, 1915,  
9000 ft.

Marsh Lake, White Mts, Ariz. July 19

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Mt. Thomas,

"

East slope July 27

10000 ft.

"

"

"

"

"

"

"

near summit

"

11000 ft.

"

"

"

"

"

"

"

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"

"

"

"

East slope

"

9500 ft.

2473 - *Sorbus scopulina*

74

Shrub

75 - *Salix tibbiana*

76 - *Pentstemon*

77 -

Fern

78 - *Picea engelmannii*

79 - *Ribes*

Spring fruit

2480 -

Shrub

81 - *Dasiphora fruticosa*

Yellow rose-like fls.

Ht. 3 ft.

82 - *Picea engelmannii* <sup>apparently same species</sup>

Larger cones than trees at higher altitude of

83

Orchid

84 - *Calochortus*

85

Vine

86 - *Juglans*

87 - *Pinus chihuahuana*

Arizona, 1915.  
Mt. Thomas, White Mts, E. slope July 27 9500 ft.

"

" E. slope

"

"

"

" near summit

"

11000 ft.

"

"

"

"

"

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"

" E. slope

"

9500 ft.

"

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"

"

Alpine

==

==

July 31

8000 ft.

"

"

"

Cooley's Ranch, Apache Ind. Res. Aug. 8

6800 ft.

White River (10 mi. N.)

"

6300 ft.

2488 - *Ceanothus*

89 - *Quercus*

2490 - *Mimosa biuncifera*

91 - *Alnus*

abundant along river

92 - *Rosa*

Growing along river - elongated fruit

93 - *Nolina*

Rocky sides of canyon

94 - *Schmalzia*

Along canyon bottom

95 - *Cerataegus*

Growing beside stream along canyon bottom

96 - *Lonicera*

97 - *Rhamnus*

98 -

Shrub

99 - *Vitis*

2500 - *Prunus*

Common wild cherry

1 - *Juniperus scopulorum*

2 - *Cercocarpus*

Arizona, 1915.

White River (10 mi. N.) Apache Ind. Res. Aug. 8, 6300 ft.

" " " " "

" " " Aug. 9 5500 ft.

" " " " "

" " " " "

" " " " "

" " " " "

Bonito Creek, 20 mi. SE. of White River " Aug. 12, 6000 ft.

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

" " " " "

2503 - *Ceanothus*

2504 - *Quercus reticulata*

5 - *Quercus arizonica*

6 - *Quercus*

Low-growing scrubby species

7 - *Rhamnus crocea*

8 - *Pinus*

Pinon

9 - *Neoma*

2510 -

Alt. 10-15 ft. - 5-parted fruit - growing <sup>tree</sup> in  
cracks of rocks on dry hills.

11 - *Larrea*

12 - *Quercus wilcoxii*

13 - *Quercus arizonica*

14 - *Quercus reticulata*

15 -

Shrub

16 *Cercocarpus*

17

button-like plant

Shrub

Arizona, 1915

Hatanes Plateau, 20 mi. N.E. of Rice, Aug. 15; 6200 ft.

" " " "

" " " "

" " " 5500 ft.

Santa Catalina Mts (Pima Canyon) Aug. 22 4500 ft.

" " " 5000 ft.

" " " 4000 ft.

" " " " "

" " " 5000 ft.

" " " "

" " " 4000 ft.

" " " "

" " " 4500 ft.

" " " 3500 ft.

" " " 4500 ft.

2518 - *Vitis arizonica*

19 -

Shrub

Ht. 1 - 2 ft.

2520 - *Yucca*

Smooth-edged leaves - Ht. 3 - 5 ft.

21 - *Ptelea*

22 - *Populus*

23 - *Baccharis*

24

"

Herb

Specimen cropped by mountain sheep.

25 - *Agave*

26 -

Shrub

27 - *Nolina*

28 - *Rhamnus crocea*

Shrub

29

Shrubby herb

2530

Shrub

31 - *Fendlera rupicola*

"

32 - *Garrya*

Shrub

Arizona, 1915,  
Santa Catalina Mts. (Pima Canyon) Aug. 22, 3500 ft.

"

"

"

"

"

"

"

4500 ft.

"

"

"

"

"

"

3000 ft.

Coyote Mts

Sept. 2

4500 ft.

"

"

5000 ft.

"

"

4000 ft.

"

"

3500 ft.

"

"

"

"

"

6000 ft.

"

"

3500 ft.

"

"

"

"

"

4000 ft.

"

"

6000 ft.



2533 -	Shrub	Leoyote Mts., Ariz.	Sept. 2	1915, 4500 ft.
cotton-like species				
34 -	Herb	" "	"	6000 ft.
35 -	Shrub	" "	"	4500 ft.
36 - <i>Pinus edulis</i>		" "	"	5000 ft.
37 - <i>Quercus</i>		" "	"	6200 ft.
<i>Q. chrysolepis</i> <del>by style</del>				
38 - <i>Quercus reticulata</i>		" "	"	"
39 - <i>Quercus arizonica</i>		" "	"	4000 ft.
2540 - <i>Parkinsonia microphylla</i>		" "	"	3200 ft.
41 - <i>Juglans</i>		" "	"	5000 ft.
42 - <i>Chrysonoma</i>		" "	"	"
43 - <i>Robinia</i>		" "	"	6000 ft.
44 - <i>Ptelea</i>		" "	"	4000 ft.
45 -	Tree	" "	"	3500 ft.
46 - <i>Cylindropuntia</i>		" "	"	3000 ft.
47 -	Shrub	Silver Peak Mts., Nevada (S. slope)	Sept. 29	5000 ft.

2548-

Herb

Silver Peak Mts., Nevada (S. slope) Sept. 29

1915  
5000 ft.49 - *Eucelia*

Shrub

" " " " "

50

Shrub

" " " " "

51 - *Gutierrezia*

Shrub

" " " " "

52

Herb

" " " " "

53

Herb

" " " " "

54

Herb

" " " " "

55 - *Atriplex*

Small fruit

56 -

Shrub

Known locally as buck brush - leaves &amp; stems grayish

57

Herb

" " " " "

58

Shrub

" " " " "

59 - *Lupinus*

Herb

" " (Near summit) Oct. 2 8500 ft.

2560 -

Herb

Umbellifer

" " " " 9000 ft.

61 - *Purshia tridentata*

Shrub

" " " " 9000 ft.

62 - *Pimpinella aristata*

" " " Oct. 18 8500 ft.

2568 - *Ericotheca dumosa*

64 - *Ribes*

65 -

66

67 - *Lupinus*

68 - *Philadelphus*

69 -

2570 - *Sambucus*

71 - *Cercocarpus*

72

73

74

75 - *Artemisia*

76 - *Salix*

77 - *Ephedra*

Shrub

Shrub

"

Shrub

Shrub

"

"

Shrub

Shrub

Shrub

Shrub

Shrub

Silver Peak Mts., Nevada

Oct. 18

1915  
8500 ft.

"

"

"

"

"

"

"

7500 ft.

"

"

"

8500 ft.

"

"

"

"

"

"

"

"

"

"

"

7000 ft.

"

"

"

8500 ft.

"

"

"

8500 ft.

"

"

"

"

"

"

"

"

"

"

"

7000 ft.

"

"

"

7500 ft.

"

"

"

"

"

"

"

8500 ft.

2578- Rosa

79- Populus

2580- Symphoricarpus

81- Pentstemon

82- Acer

In clumps <sup>in dry</sup> on N. slope canyon, Alt. 15-20 ft.

82-

Grass

84

Grass

85

Grass

86

Grass

87

Grass

88

Sedge

89

Grass

2590- Juniperus monosperma

91- Ephedra

92- Atriplex  
Sua. sp.

Silver Peak mts, Nevada

Oct. 18

1915

7500 ft

"

"

"

7500 ft

"

"

"

8500 ft.

"

"

"

"

"

"

"

"

"

"

"

7500 ft.

"

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"

"

"

8500 ft.

"

"

Oct. 19

5000 ft.

"

"

"

"

2593 - *Ceanothus*

94 - *Gutierrezia*

95 - *Chrysothamnus*

96 - *Atriplex*

97 -

Glass

98

Salt Bush

99

Herb

<sup>yellow fls.</sup>  
2600 - *Chrysothamnus*

1 - *Echinocereus*

2 - *Echinocactus*

3 - *Juniperus*

4 - ~~S~~

alt. 3 ft.

Shrub

5 - *Vitis arizonia*

6 - *Salix*

alt. 10 ft.

7 - *Rubus*

alt. 4 ft.

Blackberry

Silver Peak Mts., Nevada

1915  
Oct. 19 6000 ft.

"

"

"

5000 ft.

"

"

"

"

"

"

"

"

Blair

"

Oct. 31

"

"

"

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"

Powie (3 1/2 mi. S.) Arizona

May 6, 1916 3800 ft.

"

"

"

"

"

4000 ft.

"

"

"

"

"

Hantan Plateau (Cazador Spr.)

May 10, 1916 4000 ft.

"

"

"

"

"

"

"

"

"

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"

"

2608 - *Mamillaria*

9 - *Echinocereus*

2610 - *Juniperus monosperma*

11 - *Nicotiana*

12 - *Pinus monophylla*

13 - *Forestiera nemoralis*

14 - *Populus wislizeni*

15 - *Celtis reticulata*

16 -

Alt. 2 ft.

17 - *Schmaltzia*

18 - *Quercus milcoxii*

19 - *Salix*

20 - *Rhamnus*

21 - *Aquilegia*

22 - *Sapindus drummondii*

but

Columbine

Arizona, 1916,  
Hantan Plateau (Cazador Spr.) May 10 4000 ft.

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

2623 - *Pellaea mucronata*

24 - *Baccharis*

25 - *Baccharis*

Dry mesa above spring <sup>Probably</sup> Same as 2624

26 - *Calliandra californica*

Dry mesa above spring

27 - *Echinocactus*

Dry mesa above spring.

28 - *Echinocereus*

S. slope above spring

29 - *Ceanothus*

*integrifolius* style

(photo)

26 30 - *Ptelea*

31 - *Robinia neomexicana*

32 - *Leurocarpus*

S. slope

33 - *Prunus*

34 - *Pinus edulis*

35 - *Prunus*

Round leaf.

36 - *Salix*

37 - *Acer*

Arizona, 1916  
Hantan Plateau (Cazador Spr.) May 10 4000 ft.

" " " "

" " " 4500 ft.

" " " "

" " " "

" " " 5000 ft.

" (5 mi. N.E. of Cazador Spr.) " 5600 ft.

" " " "

" " " "

" " " 5500 ft.

" (10 mi N.E. of Cazador Spr.) May 11 6000 ft.

" " " "

" " " "

" " May 13 "

" " " 5500 ft.

2638 - *Pinus monophylla*

2638a - *Lupinus*

39 -

Shrub

2640 - *Rhus cismontana*

41 - *Lonicera*

(photo)

42 - *Agave parryi*

(photo)

43 - *Echinocereus*

(photo)

44 - *Amelanchier*

44a *Arctostaphylos*  
*sinuata*

?

45 - *Arctostaphylos*  
*puberula*

!

46 - *Ceanothus*

47 - *Juglans major*

48 - *Rosa*

49 - *Rhamnus crocea*

2650 - *Yucca angustifolia*

51 - *Eucelia*

Small leaf.

52 - *Berberis*

Arizona, 1916  
Pantan Plateau (10 mi. N.E. of Gaylor Spr., May 13, 6000 ft.)

" " " " "

" " " " "

" " " " "

" " " " 6500 ft.

" " " " 7000 ft.

" " " " 6000 ft.

" " " " "

" " " " "

" " " May 14 5800 ft.

" " " " 5500 ft.

" " " " "

" Gaylor Spr. " May 15, 4000 ft.

" " " " "

" " " " "

" " " " "



2653 - *Populus*

54 - *Floranthus*

55 - *Lycium*

56 - *Salix*

57 - *Sambucus*

Grows to very large size along Gila River

58 -

H. 1 ft.

Shrub

59 - *Echinocereus*

Long, slender, plant spines

2660 - *Dudleya*

61 - *Mamillaria*

62 - *Echinocactus*

Plant 6 ft. high, others 3 to 4 ft. more normal (photo)

63 - *Agave*

*Lichugilla* type

64 - *Adiantum*

Maidenhair - N. slope in wet canyon (photo)

65 - *Aquilegia*

Yellow fls.

(photo)

66 - *Muhlenbergia dumosa*

Bamboo-like plant about 3 to 4 ft. high (photo)

67

N. slope in wet canyon

Rice, San Carlos Ind. Res.

Arizona, 1916  
May 18 2700 ft.

"

"

"

"

"

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"

"

May 19

"

"

"

"

2800 ft.

Salt River (12 mi N. of McMillenville) May 24

"

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2668 - *Caanocthus*

69

Fern

N. slope in wet canyon

2670

Fern

N. slope in wet canyon

71

Fern

N. slope <sup>dryer situations than 2671</sup> in wet canyon, but growing in

72

Fern

N. slope in wet canyon

73 - *Roliva*

(photo)

74 - *Ptelea*

75 - *Rhus*

76 - *Arctostaphylos*  
Smooth leaves

77 - *Cercocarpus*

78 -

Shrub

Dry banks of river.

79 - *Dodonaea viscosa*

Common on N. slopes. up to 3000 ft.

2680 - *Prunus*

81 - *Grossularia*

82 - *Gerataegus*

Salt River (12 mi. N. of McMillenville)

Arizona, 1916  
May 24, 3800 ft.

"

"

"

2800 ft.

"

"

"

"

"

"

"

"

"

"

"

"

McMillenville

May 29 4500 ft.

"

"

"

"

"

"

"

"

"

"

"

"

Salt River

May 25

2800 ft.

"

"

"

Chiricahua Ranch, 18 N. of Culva June 7

4700 ft.

"

"

"

"

"

"

"

"

2683 - *Rhamnus purshiana*

84 - *Morus*

85 - *Eurodium*  
*affiliatum*

86 - *Nolina*

87 - *Opuntia*

*leptodermis* - dark red fls. (photo)  
Hub

89 - *Schmalizia trilobata*

2690 - *Baccharis*

91 - *Forsteria*

92 - *Simmondsia*

93 - *Agave parryi*

94 - *Sapindus drummondii*

95 - *Peridictyon*

96 - *Quercus chrysolepis*

97 - *Agave*

Arizona, 1916  
Chiricahua Ranch, 18 mi. N. of Guila, June 7 4700 ft.

" " " "

" " " "

" " " "

" " " "

Guila Mts. 12 mi. N. of Guila June 8 "

" " " "

" " " "

" " " "

" 5 mi. N. of Guila " "

" 12 mi. N. of Guila " "

" " " "

Mt. Turnbull, N. side ~~4500~~ June 10 4500 ft.

" " " 6000 ft.

" " " "

2698 - *Philadelphus*

99 - *Prunus*

2700 - *Fallugia parodopa*

1 - *Holodiscus dumosus*

2 - *Symphoricarpos*

3 - *Prunus emarginata*?

Small, narrow leaf

4 - *Azave palmieri*

5 - *Baccharis*

Black trunk

6 - *Opuntia*

Small leaved sp.

7

Dodder

8

Shrub

Leguminous shrub

9

Shrub

Ht. 2 ft.

2710 - *Aleonia*

Shrub

Ht. 2 - 3 ft.

11 - *Astragalus*

Shrub

Toes mud

12 - *Atriplex* -

Shrub

Ht. 2 - 4 ft. - staminate plant.

Mt. Turnbull, N. side

June 10

Arizona, 1916  
7500 ft.

"

"

"

6000 ft.

"

"

"

7000 ft.

"

"

"

7800 ft.

"

"

"

7500 ft.

"

"

"

"

"

"

"

4500 ft.

"

"

"

3500 ft.

Wash Flat,

June 7

5000 ft.

Leiyama Valley 4 mi. E. of Leiyama Ranch June 26

California, 1916.  
2200 ft.

"

"

"

"

"

"

"

"

"

"

"

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"

2713 - *Salix*

Along Guyana River.

14 - *Ephedra*

Common along wash

6-8 ft.

(photo)

15 - *Atriplex*

4-6 ft.

Common along wash - pistillate plant.

16 - *Pentstemon*

Woody at base - along wash. - ht. 2 ft.

17 - *Atriplex*

Small leaves - abundant along valley bottom

18 - *Eriogonum fasciculatum*

19 - ~~to~~

Shrub

Comp. with *Ephedra*-like fruit capsules - com. along sandy wash

2720 -

Shrub

Green - *Chenopodium*-like compound along wash.

21 - "

Shrub

*Portulaca*-like sp. with few stems along wash.

22 - *Eriodictyon*

Large sp. - ht. 6-8 ft. - abundant along wash, in places

23 -

Shrub

Fleshy leaves - rather scarce, along wash

24 *Eriogonum fasciculatum*

25 - *Eriogonum*

26 - *Eriogonum*

27 - *Eriogonum*

California, 1916.

Guyana Valley, 4 mi. E. of Guyana Ranch, June 26 2200 ft.

" 3 mi. E. of Guyana Ranch. June 28 "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

June 29

Guyana Valley, S. side 6 mi. S.E. of Guyana Ranch, July 3-2500 ft.

" " " "

" " " "

" " " "

2728-

Composite plant associated with juniper.

2729

Glutinous composite shrub, assoc. with juniper

~~Ente~~

2730 - *Encelia*

along washes & south slopes in juniper belt.

31 - *Juniperus californica*

32 - *Arctostaphylos glauca*

33 - *Lupinus fallax*.

34 - *Quercus*

35 -

Comp. shrub with velvety stems & divided leaves. assoc. with juniper.

36 - *Solanum*

along wash in juniper belt

37 - *Salix*

Small sp. - along Cuyama River

38 - *Cleome*

39 - *Astragalus*

2740 - *Atriplex*

leaves style

41 - *Populus*

California, 1916

Cuyama Valley, S. side 6 mi. S.E. of Cuyama Ranch, July 3, 2600 ft.

" " " " 2600 ft.

" " " " 2600 ft.

" " " " "

" " " " "

" " " " 2500 ft.

" " " " 2600 ft.

" " " " "

" " " " "

" 3 mi. E. of Cuyama Ranch, July 7 2200 ft.

" " " " "

" " " " "

" " " " "

" " " " "

← " 6 mi. W. of Spanish Ranch, July 11 1500 ft.

2742 - *Forstiera*

43 - *Prunus*

Large fruit

44 - *Opuntia*

45 - *Pleuchea*

46 - *Cerogonum*

Sp. growing on western slopes

47 - *Adenostoma sparsifolium*

48 - *Sambucus*

49 - *Adenostoma sparsifolium*

2750 - *Tonicera*

Sm. fls.

51 -

Mint with l. purple fls.

52 - *Cercocarpus*

53 - *Quercus*

Similar to *chrysolepis*

54 - *Eriodictyon*

Whitish leaves

55 - *Cylindropuntia*

56 - *Atriplex*

Lower Sonoran sp. occurring also in S. Joazez Val.

California, 1916.  
Cuyawana Valley - 6 mi. W. of Spanish Rch., July 11, 1908 ft.

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " 2000 ft.

" " " 1300 ft.

" " " "

" Caliente Ranch July 14 1800 ft.

2757-

Common along Geyawa River.

Shrub  
(photo)

58 - *Atriplex*

Common on valley bottom

(photo)

59 - *Atriplex*

Common on valley bottom <sup>apparently</sup> smaller than 2758

2760 - *Cercocarpus*

(Short pubescent fruit)

61 - *Quercus*

(*Q. undulata*?)

62 - *Quercus gambelii*

63 - *Symphoricarpos*

64 - *Arctostaphylos lomentosa*  
(Pubescent species)

65 -

Herb

Associated with yellow pine & *Ceanothus Fendleri*

66 - *Ceanothus*

Ht. 4 ft. (*integerrimus* type) Not common

67 - *Larrea wrightii*

68 - *Solidago*

Herb

Associated here with yellow pine (*Slender raceme*)

69 - *Solidago*

Assoc. with yellow pine (*Broad raceme*)

70 - *Quercus reticulata*

Upper Sonoran zone and into Transition.

71. *Quercus grisea*

Assoc. with *Q. emoryi* & *Q. reticulata*.

California, 1916

Geyawa Valley, 3 mi. E. of Geyawa Res. July 15, 2200 ft.

" " " "

Apache Mail Mt. Arizona.

Aug. 21/16. 6500 ft.

Cenozoic King

" 25 " 6000 ft.

" " " "

" " " 6500 ft.

" " " "

" " " "

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" " " "

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2772-

(Stems) climbing over oak.

73 - *Juglans walteri*74 - *Fraxinus attenuata*  
(leom. sp.)75 - *Quercus*  
(*chrysolepis* type)76 - *Padus*  
(leom. sp.)77 - *Ceanothus*  
Truncate or emarginate leaves78 -  
Composite in Transition Zone79 - *Rhamnus*

80 -

(leom. sp. wh. fls.) Transition Zone

81 - *Sambucus*

Transition Zone.

82 - *Eriodictyon*83 - *Arctostaphylos*  
(smooth leaves)84 - *Ceanothus leucocarpus*  
(long, slender fruit)85 - *Rhamnus c. pilosa*

86 -

Ht. - 6 ft. (legume with sm. compound leaves)  
Leaves to 4-5 ft. long Upper Son. or Transition?

vine

Crown King

Arizona, 1916  
Aug. 27 5600 ft.

"

"

"

"

"

"

"

"

6700 ft.

"

"

6000 ft.

"

"

5800 ft.

"

"

6700 ft.

"

"

6500 ft.

"

"

6700 ft.

"

"

7000 ft.

"

"

5600 ft.

"

"

6000 ft.

"

"

6000 ft.

"

"

6500 ft.

"

"

"

2787 - *Ptelea*

88 -

Tree

about rock-crooks on north slopes

89 - *Baccharis glutinosa*

2790 - *Populus wislizeni*

91 -

Shrub

elliptic - like *sp.* - yel. fls. - ht. 6-8 ft

92 - *Zizyphus*

fls. on. and inconspicuous.

93 - *Atriplex canescens*

94 - *Atriplex canescens*

apparently same but fruiting less heavily than 2793

95 - *Quercus*

(*Q. willeoii* type)

96 -

Herb

ht. 3 ft.

97 - *Echinocactus*

98 - *Gutierrezia glomerata*

99 - *Atriplex canescens*

2800 -

Shrub

ht. 1-2 ft.

1 - *Artemisia tridentata*

Crown King

"

"

6500 ft.

Turkey Creek

Aug. 31

3400 ft.

"

"

"

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"

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"

"

"

"

"

"

"

3000 ft.

Anita

Sept. 3

5800 ft.

"

"

"

Grand Canyon (El Tovar)

"

6800 ft.

"

"

Sept. 7

"

2802 - *Artemisia*

Sim. to *A. tridulata*, but darker in color & smaller.

3 - *Juniperus*

Bark in strips; foliage rather lax

4 - *Fendlera rupicola* *tormentella*?

5 -

Comp. shrub. - ht. 1 ft.

6 -

Ht. 1 ft.

7 - *Nolina*

8 -

Comp shrub - Ht. 3 ft.

9

Ht. 4 ft.

2810

Ht. 1-2 ft.

11 - *Coleogyne ramosissima*

Ht. 2-2 1/2 ft.

12

Ht. 3 ft.

13 - *Fallugia paradoxa*

Ht. 2 ft.

14 - *Atriplex*

Assoc. with *Coleogyne ramosissima*

15 - *Yucca angustissima*

16

Ht. 3 ft.

Shrub

Shrub

Shrub

Shrub

Shrub

Shrub

Shrub

Shrub

Shrub

Shrub

Grand Canyon (El Tovar)

Arizona, 1916.  
Sept. 7 6800 ft.

"

"

"

"

"

(Bass Camp)

Sept. 8

6600 ft.

"

"

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"

Shinnemo Creek

Sept. 10

3000 ft.

"

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"

Bass Canyon

Sept. 12

3400 ft.

"

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"

Sept. 13

"

"

"

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"

3200 ft.

2. 2817 - *Schmaltzia* Shrub  
Ht. 3 ft.  
18 - *Fraxinus*  
Large rounded leaves.  
19 Shrub  
~~2818~~ Composite - *Baccharis*-like, leaves very small  
2820 - *Gutierrezia* Shrub  
21 - Shrub  
Ht. 2 -  $2\frac{1}{2}$  ft. - white flowers  
22 - Herb  
Ht. 2 ft.  
23 - Fern  
Dry cliffs in rocks  
24 - *Ceanothus* Shrub  
Ht. 4 ft. - In shaded portion of south wall  
25 - *Schmaltzia*  
26 - *Quercus*  
Ht. 4-6 ft. - Shaded part of south wall  
27 - *Nolina*  
Ht. of stalk 5 ft.  
28 Shrub  
Ht. 3 ft. - very small leaves  
29 - *Ptilia* Shrub  
Ht. 6 ft. - Shaded part of south wall  
28 30 - ~~30~~ Lichen  
On limestone in shaded part of south wall  
31 - Shrub  
*Ceanothus*-like - Ht. 4 ft. - Upper S. Zone

32

Grand Canyon, Ariz. (Bass Canyon) Sept. 12/16	3200 ft.
" " " " " "	3500 ft.
" " " " " "	3200 ft.
" " " " " "	"
" " " " " "	3500 ft.
" " " " " "	3400 ft.
" " " " " "	3000 ft.
" " " " " "	3500 ft.
" " " " " "	"
" " " " " "	3600 ft.
" " " " " "	3500 ft.
" " " " " "	3400 ft.
" " " " " "	3600 ft.
" " " " " "	"
" " " " " "	5200 ft.

2. 2832 - *Salix exigua*

33 - *Rosa*

34 - *Phragmites phragmites*  
Ht. 6 ft.

Grass

35 - *Juniperus scopulorum*

36 - *Mammillaria*

37 - *Opuntia*  
Small flat joints

38 - *Atriplex canescens*

39 - *Atriplex canescens*

2 2840 - *Atriplex canescens* } ex.

41 - *Atriplex canescens*

42 - *Atriplex canescens*

43 - *Atriplex confertifolia*  
fleshy-leaved

44 - *Senecio filifolius*  
com. grayish composite

45 - *Artemisia atriplex confertifolia*  
*Artemisia bigelovii*

46 - *Yucca angustifolia*

Iron Point, Humboldt Co. Nevada, 1916.  
Sept. 30. 7300 ft.

" " " "

" " " "

Shell Creek Range (Cleveland Co.) Oct. 31 7500 ft.

" " " "

" " " 8500 ft.

Winslow, Ariz.

July 10, 1917 - Arizona 7480 ft.

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

Winona " July 12 " 5800 ft.

2847 -

2847 - ~~Grossularia~~ *Ribes inebrians*

48 - *Schmalzia bakeri*

49 - *Vitis arizonica*

2850 - ~~Thistle~~ *Cirsium arizonicum*

51 - *Juglans major*

52 - *Amelanchier utahensis*

53 - *Forsteria neomexicana*

54 *Manarda menthaefolia* Horse mint

55 - *Symphoricarpos oreophilus*

56 - *Berberis fremontii*

57 *Mentzelia Nuttallia multiflora*  
Adhesive herb - yel. fl. - eaten by gophers

58 - *Bouteloua gracilis*  
Growing in cinder beds in circular shapes.

59 - *Rhus cismontana* ✓

2860 - *Gycium* ~~leucanthemum~~ *pallidum*

61 - *Dasiphora fruticosa* ✓  
Shrub with yellow fls.

Winona

"

"

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Hart Prairie, San Francisco Mts.

Arizona, 1917.  
July 16 6400 ft.

"

"

"

"

"

"

"

"

"

"

"

"

"

July 22

8000 ft.

2 2862 - *Rosa fendleri*

63 - *Mamillaria*  
Collected green

64 -  
Herb with yellow *Calceola*-like flo.

65 - *Mamillaria vivifera* (fide Rose)  
Barbarian specimen

66 - *Populus wislizeni*  
Large-leaved

67 - *Cheilanthes feci* Fern  
From dry crevices in rocks.

68 - *Artemisia bigelovii*  
Sun. sp. with tridentate leaves

69 - *Eucelia frutescens*

2 2870 - *Opuntia basilaris* (fide Rose)

71 - *Echinocactus lecontei* (fide Rose)  
Sun. sp. with multiple stems - usually 5 to 7 or more

72 - *Opuntia whipplei* (fide Rose)  
Sun. cholla abundant on lava

73 - *Ephedra torreyana*  
Grayish sp. with low-growing habit

74 - *Ephedra viridis*  
Greenish sp. with taller habit of growth than preceding

75 - *Artemisia filifolia*  
Grayish sage-like shrub common in upper Son. zone.

76 - Agave

Hart Prairie, San Francisco Mts.

Arizona, 1917  
July 22 8000 ft.

Cedar Ranch Wash (Locket Tank) July 24 5600 ft.

" (3 mi. above mouth) July 30 4500 ft.

" " " "

Little Colorado Riv. (5 mi. below <sup>Cameron</sup> ~~Cameron~~) July 31 4300 ft.

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

2877 - *Juniperus monosperma*  
 occurs very sparingly on N. slope - near lower limit  
 78 - *Sarcobatus* ~~†~~ *vermiculatus*.

79 - *Fraxinus anomala*  
 Broad rounded leaves  
 2880 - *Chrysothamnus* (sp. doubtful)

81 - *Quercus baccata*

82 - Shrub  
 Peculiar bifurcated branches

83 - *Atriplex* or ~~*Guthriei*~~ *canescens*

84 - ~~*Atriplex*~~ *Lippia Wrightii* ✓

85 - *Atriplex canescens*

86 - *Prosopis glandulosa* ✓

87 - *Caryella filifolia* Shrub  
 2888 - *Eupatorium arizonicum*  
 Sp. with pungent smell

89 - *Gutierrezia canis*

Abund. in U.S. zone

2890 - ~~*Heloma*~~ *Pentstemon serrulatus*

91 - *Tetradymia inermis* Shrub

A characteristic comp. sp. in U.S. zone

92 - *Crassina grandiflora* Herb

A very abundant sp. in U.S. zone

Arizona, 1917  
 Little Colorado Riv. (5 mi. below Cameron) Aug. 31 4500 ft.

"	"	"	4300 ft.
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"

~~Moenkopie Wash~~ Cameron (5 mi. N.) Aug. 1, 4400 ft.

Aztec Peak (7 mi. N.) Aug. 6 6000 ft.

Aztec Peak (7 mi. N.) Aug. 6 6000 ft.

" (10 mi. N.) " 6500 ft.

Q Leary Peak (N. base.) " "

" " " "



- 2893 - *Psilostrophe agastoides* Herb  
 A very abundant sp. in U.S. zone
- 94 - *Populus angustifolia*  
 A very narrow-leaved sp. growing at Turkey Park
- 95 - *Mamillaria vivifera*  
 Photo of plant with single flower.
- 96 - *Salsola pestifer*  
 Russian thistle - Picked in pouches of *Perodipus*
- 97 - *Oxytropis lambertii*
- 98 - *Phragmites phragmites*  
 reed-like grass abundant along wash
- 99 - *Celtis reticulata*  
 com. along lower part of canyon
- 2900 - *Juniperus scopulorum* ex  
 Drooping species
- 1 - *Rosa fendleri*
- 2 - *Regulus interior* ✓  
 com. along lower part of canyon
- 3 - *Alnus tenuifolia*
- 4 - *Salix exigua*  
 narrow-leaf.
- 5 - *Schmalzia bakeri*
- 6 - *Philadelphus Fendleri falcata*
- 7 - *Ribes Grossularia leptantha*

- Arizona, 1917
- O'Leary Peak (N. Base.) Aug. 6 - 6500 ft.
- Winona Aug. 8 - 6400 ft.
- Angell (10 mi. N., near Walnut Park) Aug. 10, 5600 ft.
- Climax Lee " 17 "
- Flagstaff Aug. 7 ~~Aug. 11~~ 6900 ft.
- Climax Lee Aug. 17 5600 ft.
- Canyon del Muerto Aug. 18 6000 ft.
- " Aug. 19 6500 ft.
- " " 7000 ft.
- " " "
- Tumicha Mts. (Spruce Creek) Aug. 20 7000 ft.
- " " " "
- " " Aug. 20 "
- " " " "
- " " " "

2

2908 - *Ceanothus stansburiana* ✓9 - ~~*Populus angustifolia*~~ *Salix*2910 - *Tradescantia*11 - *Picea engelmannii*

In shaded canyon - more abundant higher up

12 - *Amelanchier ~~atahensis~~ mormonica*13 - *Philadelphus microphyllus*14 - *Cornus instolonae*15 - *Rubus ~~breobatus~~ neomexicanus* ✓

Thimbleberry - growing on N. slopes

16 - *Arctostaphylos uva-ursi* ✓

Dwarf species - growing among yellow pines

17 - *Alnus tenuifolia*

Along creek - large leaves

18 - ~~*Betula*~~ *fontinalis* ✓

Along creek - small leaves

19 - *Rubus arizonicus* ✓

Raspberry - along creek

2920 - *Aquilegia caerulea*

Colubine - wet meadow along creek - blue fl.

21 - *Ribes Grossularia leptantha*

Among willows along creek

22 - *Dasiphora fruticosa*

Tumicha Mts. (Spruce Creek)

Arizona, 1917.  
Aug. 20 7000 ft.

" " " "

" " " "

" " " "

" " " "

" " " "

" " Aug. 21 7500 ft.

" " " "

" " " 7800 ft.

" " " "

" " " "

" " " 8800 ft.

" " " "

" " " "

" " " "

2923 - *Distegia involuerata* ✓

24 - *Humulus americanus*

Hops - climbing over willows

25 - ~~*Grossularia*~~ *Ribes inebrians*

S. slopes only - growing in dry rocky places

26 - *Juniperus communis sibirica*

27 - *Sericotheca dumosa* ✓

S. slopes - among rocks

28 - *Philadelphus microphyllus*

S. slopes, among rocks

29 - *Ceanothus divaricatus foderi* ✓

Among yellow pines on S. slopes

2930 - *Lupinus aduncus*

S. slopes among yellow pines

31 - *Purshia tridentata*

Growing among yellow pines on S. slopes

32 - *Sambucus neomexicana*

Along creek

33 - *Pinus edulis* ✓

Scarce on S. slopes at this elevation

34 - *Quercus neomexicana*

35 - *Quercus turbinella*

Scrub oak - S. slopes

36 - *Krameria glandulosa*

Peculiar spiny fruit.

37 - *Janusia gracilis*

Woody - fruit yellow fls.

Shrub

Vine

Tumicha Mts. (Spruce Cr.)

Arizona, 1917  
Aug. 21 8800 ft.

" " " "

" (Roof Butte)  
^ (Near head of Spruce Cr.) Aug. 23 9000 ft.

" " " 9500 ft.

" " " "

" " " "

" " " 9000 ft.

" " " "

" " " "

" " " "

" " " "

" (Spruce Cr.) " 7000 ft.

" " " "

Colorado Riv. (mouth Diamond Creek) Sept. 7 2000 ft.

" " " "

- 2938 - *Yucca* ~~arborescens~~ *californica* Shrub  
Ht. 2 ft. - a cyp.  
39 - *Agave* *utahensis*
- 2940 - ~~*Solanum*~~ *Physalis* *hederacea* *folia* Herb  
*acanthocarpa*  
41 - ~~*Cylindropuntia*~~ *Opuntia* (*Cylindropuntia*) (*file Rose*)  
Joints usually 8-10 in. long - thorns rather sparse.  
42 - *Quercus* *turbinella*  
Low-growing scrubby species in upper son. zone.  
43 - *Gutierrezia* *tenuis*
- 44 - *Senecio* *riddellii* Shrub  
A com. composite species with tender top & woolly base  
45 - *Atriplex* *canescens* OK
- 46 - *Ceanothus* *greggii*  
*leucatus* *slip*  
47 - *Prinus* *monophylla*
- 48 - *Cercocarpus* *argenteus*  
49 - *Ephedra* *viridis*
- 2950 - *Yucca*  
True sp. - *arborescens*? (file Standley)  
51 - *Yucca* *baccata*?  
Long-leaved sp.  
52 - ~~*Echinocactus*~~ with pinkish thorns  
*Echinocereus* *engelmannii* (file Rose) (photo)

Colorado River (mouth Diamond Cr.) Arizona, 1917. Sept. 7 2000 ft.

Colorado River (mouth Diamond Cr.) Sept. 7 2008 ft.

" " " "

“ “ “ “

“ “ “ “

Peach Springs Sept. 8 4000 ft.

Hackberry, Sept. 13 3500 ft.

[illegible]

— — — — —

11 1- 3800 <sup>MS.</sup> H.

12 4500 ft.

Nazlini Aug. 27 7000 ft.

12 12 12

Gold Basin (20 mi. S. Gregg's Ferry) Sept. 18 3000 ft.

100

11

- 2 2953 - *Opuntia stanleyi* Engelm. (Fide Rose) cactus  
Species growing in low mats or clumps
- 2954 - *Atriplex canescens*  
Ht. 2 ft. - rather small fruit, abnd. on plain
- 55 - *Salizaria mexicana* Torr. Shrub  
Angular bush with bladder-like fruit
- 56 - *Gymnocarpium pallidum* Shrub  
Lycium-like
- 57 - *Sapindus drummondii*  
Along dry wash
- 58 *Lycium parviflorum*? Shrub  
Thorny sp. with orn. red fruit - on dry bushes along river
- 59 *Leocoma heterophylla* Shrub  
Common comp. on dry bushes along river
- 2960 *Oenothera luteum* Herb  
Yellow bell-shaped - like plant - along river
- 1 - *Sesuvium*  
com. along river
- 2 - *Prosopis juliflora* ✓  
along river
- 3 - *Chrysonoma laricifolia* (Gray) Greene Shrub  
Chrysonoma-like plant
- 4 - *Fraxinus attenuata*  
On dry hills in U.S. zone
- 5 - *Canotia holacantha* ✓
- 6 - *Ephedra viridis*  
On dry hills
- 7 - *Quercus turbinella*  
Ranging well down along north slopes to about 3500 ft. -  
assoc. with a *Canotia* (cuneatis style) & numerous 25 sp.

- Arizona, 1917
- Maric Mt. Mill. 40 mi. S. of Gregg's Ferry Sept. 18-3000 ft.
- " " " "
- Gold Basin 20 mi. S. of Gregg's Ferry " "
- " " " "
- Hackberry 10 mi. S. Sept. 20 3800 ft.
- Big Sandy Riv. (near Owens) " 2000 ft.
- " " " "
- " " " "
- " " " "
- " " " "
- " " " "
- Hackberry Sept. 23 3800 ft.
- " " 4000 ft.
- " " 3500 ft.
- " " 4000 ft.
- " " 3800 ft.

- 2 2968 - *Schmaltzia bakeri* Shrub  
 A common species on basal slopes of hills.  
 2968a *Eriogonum divergens* common on basal slopes of hills  
 2 69 - *Ptelea tumentosa*  
 On dry hills - assoc. with *Fraxinus* — (2964)  
 2970 - *Salix*  
 Abundant along Colorado River.  
 1 - *Bebbia juncea* Shrub  
 Abundant along Colorado River  
 2 - *Grasseria dumosa* Shrub  
 Abundant along Colorado River  
 3 - *Atriplex polycarpa*  
 Sp. with very small fruit - a dominant shrub along River  
 4 - *Atriplex lentiformis*  
 Shrub 6-7 ft. tall with fleshy leaves; common  
 2 5 - *Atriplex canescens*  
 Abundant along river  
 2 6 - *Cucurbita digitata* Gray Vine  
 Wild gourd  
 7 - ~~*Sarcobatus*~~ *Allenrolfea occidentalis* Shrub  
 6-8 ft. - occurs sparingly along river.  
 8 - *Chrysonoma laricifolia* (Gray) Greene Shrub  
*Chrysonoma*-like species  
 9 - *Atriplex canescens*  
 2980 - *Sambucus vestita*  
 1 - *Schmaltzia bakeri* Greene  
 2 - *Rhamnus c. pilosa* - ok

Hackberry		Arizona, 1917.	
		Sept. 23	3500 ft.
"	"	"	"
"	"	"	4000 ft.
Popock		Sept. 27	600 ft.
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
Kingman		Oct. 2	3300 ft.
"	"	"	"
Hualapai mts.		Oct. 4	7000 ft.
"	"	"	5800 ft.
"	"	"	5800 ft.

- 2 2983 - *Vitis arizonica*
- 2 84 - *Quercus wislizeni*  
chrysolepis-type
- 85 - *Ptelea tomentosa*
- 86 - *Eriogonum wrightii* Shrub  
white to pink fls.
- 87 - *Rosa maximiliani*
- 88 - *Ceanothus Fendleri*
- 89 - *Eupatorium arizonicum* Herb
- 2990 - *Quercus undulata*?
- 1 - *Eriogonum bakeri* Shrub  
Yellow fls.
- 2 - *Arctostaphylos pungens* HBK.  
Smooth
- 3 - *Arctostaphylos pringlei*  
pubescent
- 4 - *Senecio spartioides* Herb  
Ht. 2 ft.
- 5 - *Adenostigia wrightii* Herb  
coll. among yellow pines at Cronquist also
- 6 - *Ceriodictyon angustifolium*
- 7 - *Garrya wrightii*

Hualpai mts.

Oct. 4 Arizona, 1917.  
5800 ft.

Oct. 5 8000 ft.

" 6300 ft.

" "

" 7000 ft.

" "

" 6000 ft.

" "

" "

" 6000 ft.

" "

" 6500 ft.

" "

" 5800 ft.

" "



- 2998 - *Podus virens* W. & S.
- 99 - *Rhamnus ursina* Greene  
leom. sp.
- 3000 - *Coleosanthus californicus* Shrub  
upper sm. sp. - composite
- 1 - *Eriodictyon angustifolium* Nutt.
- 2 - *Senecio riddellii* Shrub  
Yfl. comp. with slender stems & woody base
- 3 - *Eriogonum fasciculatum* Shrub  
Dom. sp. on plains
- 4 - *Chrysantha laricifolia* Shrub  
leom. sp. com. along base of mts.
- 5 - *Quercus turbinella*  
Scrub sp.
- 6 - *Ptilia angustifolia* Benth
- 7 - *Coleosanthus californicus* Shrub  
upper sm. comp.
- 8 - *Pentstemon microphyllus* Gray Shrub
- 9 - *Chrysantha laricifolia* Shrub  
upper sm.
- 3010 - *Cercocarpus montanus*
- 11 - *Leucanthus greggii*
- 12 - *Nolina microcarpa*

Squalpai Mts.

Chloride

Marquahala Mts.

Arizona, 1917  
Oct. 5 5800 ft.

Oct. 9 4000 ft.

Oct. 14 5000 ft.



2 2 3013-*Quercus turbinella*

2 14-*Garrya wrightii*

15-*Eriogonum wrightii* Shrub

16 *Eriogonum fasciculatum* Shrub

3019 *Salvia* (sp. doubtful) Shrub

18-*Baccharis* (sp. doubtful)

19-*Berberis trifoliolatus*

2 3020-*Simmondsia californica*

21

22

Harguabola Mts.

"

"

"

"

"

"

"

Arizona, 1917  
Oct. 14 5000 ft.

"

"

"

"

"

"

"

3000 ft.

3000 ft.

"